

CLAIMS

1. A slurry processing system for pumping slurry from a slurry processing unit to a treatment facility comprising, in combination:

a slurry processing unit;

a treatment facility;

a slurry delivery pipeline for transporting slurry from the slurry processing unit to the treatment facility; and

a make-up water return pipeline for transporting make-up water derived from the aqueous phase of the slurry processed at the treatment facility to the slurry processing unit.

2. A slurry processing system according to Claim 1, the slurry processing unit including:

a sludge hopper;

a make-up water booster pump;

a slurry inlet pump;

a slurry discharge pump;

discharge piping coupled to the slurry inlet pump, the slurry discharge pump and the slurry delivery pipeline; and

make-up water piping coupled between the make-up water return pipeline and the booster pump, including an

injection pipe connected between the booster pump output and the slurry discharge piping and a return water line for supplying make-up water to the sludge hopper.

3. A slurry processing unit comprising, in combination:

a sludge hopper;

a make-up water pipeline for conveying make-up water from an on-shore treatment facility to the sludge hopper;

an inlet make-up booster pump;

inlet water piping connecting the make-up water pipeline to the sludge hopper and to the inlet of the booster pump;

a slurry discharge pump;

a slurry delivery pipeline for conveying slurry from the slurry discharge pump to an on-shore treatment facility;

slurry piping connecting the output of the inlet slurry pump to the input of the slurry discharge pump;

discharge piping connected between the outlet of the discharge pup and the slurry delivery pipeline;

make-up water piping having an input connected to the output of the inlet make-up water pump; and

make-up water injection piping connected to an intermediate point of the slurry piping.

4. A closed loop slurry processing system for pumping varying compositions of slurry via a floating delivery pipeline to an on-shore treatment facility comprising, in combination:

a buoyant return pipeline connectable to the on-shore treatment facility for supplying process treatment water as make-up water to the input of a slurry processing unit of the type including an inlet make-up water booster pump and an inlet slurry pump;

a discharge pump;

slurry piping connecting the output of the inlet slurry pump to the input of the discharge pump;

discharge piping connected between an outlet of the discharge pump and the buoyant slurry pipeline; and

a low pressure pump coupled between the on-shore treatment facility and the return pipeline for supplying process treatment water that has been separated from the slurry solids to be used for initial sludge dilution in the dredge hopper and for specific gravity adjustment in one or more make-up water injection stations within the slurry processing unit.

5. A method for treating sludge dredged from a waterway with an appropriate amount of water to be pumped in

slurry form through a floating pipeline to an on-shore treatment facility comprising the steps:

transporting slurry from the slurry processing unit to the on-shore treatment facility through a floating delivery pipeline; and

supplying make-up water for input to the slurry processing unit by circulating process treatment water separated from slurry treated in the on-shore confined disposal facility back to the slurry processing unit through a floating return pipeline.

6. A method according to Claim 5, including the steps:

pumping the process treatment water directly from the on-shore confined disposal facility at a first pressure level that will permit it to be transported back to the slurry processing unit; and

boosting the return process treatment water to a second pressure level that will accommodate the make-up water needs of the slurry processing unit.

7. A method according to Claim 5, further including:

circulating the process treating water in a closed

loop from the treatment facility to the slurry processing unit via the floating delivery pipeline and the return water pipeline.

8. A method according to Claim 5, including the steps:

returning process treatment water from the on-shore disposal facility to be used as make-up water in the slurry processing unit by a supply pipeline that is floated alongside the slurry delivery pipeline that transports slurry from the dredge to the disposal facility;

pressurizing the process treatment water by a pump located at the on-shore disposal facility; and

boosting the process treatment water returned through the floating make-up water pipeline by a high pressure pump located at the slurry processing unit.

9. A method according to Claim 5, including the steps:

discharging some of the process treatment water into the dredge hopper for initial sludge dilution; and

injecting some of the process treatment water as make-up water into the slurry as it is pumped through the slurry processing unit.

10. A method according to Claim 5, including the steps:

controlling inlet slurry flow, inlet make-up water flow, slurry discharge flow, make-up water pressure and the slurry delivery pressure while circulating make-up water derived from the process treatment water returned from the on-shore disposal facility.

11. A method for controlling a slurry processing unit for pumping varying compositions of slurry through a floating delivery pipeline, with the slurry processing unit having slurry piping connecting the output of an inlet slurry pump to the inlet of a discharge piping connected between the outlet of the discharge pump and the floating delivery pipeline, wherein the method comprises the steps:

pumping slurry from a dredge-mounted slurry processing unit through a floating pipeline to an on-shore treatment facility;

separating solids from the slurry at the on-shore treatment facility;

supplying make-up water derived from the on-shore treatment facility through a floating return pipeline to a booster pump on the dredge;

injecting make-up water output from the booster pump

into the slurry processing unit through make-up water piping and supplying make-up water delivered by the return pipeline into a sledge hopper on the dredge for initial dilution of the sludge.